as filed. Claims 94-104 are added. No new matter is added by the amendments to pending claims or the addition of the new claims.

Claim 1 is amended to recite that the probe is adapted for use with an inlet system of a mass spectrometer. The amendment is supported by the specification at page 16, line 24. Claim 1 is further amended by the addition of language characterizing the hydrogel's water-absorbing properties. *See*, page 11, lines 6-8. The thickness of the hydrogel layer of the probe is also added to the claim by amendment. *See*, page 18, line 15.

Claim 8 is amended by removing the reference to a silicon oxide coating on the probe surface. Claim 76 is amended to recite that the binding functionality is a group selected from an epoxides and a carbonyldiimidazole. Support for a hydrogel that includes an epoxide is found at page 21, lines 2-3 and 6. Support for a hydrogel that includes a carbonyldiimidazole is found at page 22, line 3. Claims 82 and 83 are amended to be dependent from claim 1.

New claim 94 is supported at page 20, line 5. Claim 95 is supported at page 19, line 25. Claim 96 is supported at page 20, lines 31-32. Claim 97 is supported at page 17, lines 16-18 and page 18, lines 9-14. Claim 98 finds support at page 15, lines 10-11 and line 32. New claims 99 and 100 are supported in the specification at page 17, line 28. Claim 101 is supported at page 43, line 16. Support for claim 102 is located at page 17, lines 13-14. Page 36, lines 20-26 describes the *in situ* polymerization of the hydrogel on the surface of the probe, supporting claims 103 and 104.

The amendments set forth above were discussed with the Examiner in a phone conference on June 19, 2003. The Applicants and their representatives wish to express their gratitude to the Examiner for her courtesy and helpfulness during the conference. The amendments set forth herein are substantially identical to those discussed with the Examiner, with minor changes in syntax made in the interest of clarity.

The Invention

As presently claimed, the Applicants' invention is a probe for use in a mass spectrometer. The probe includes a surface with a water-insoluble and water-swellable polymer layer deposited thereon. The polymer layer, having absorbed at least ten times its own weight of

a liquid, is at least about 10 microns thick. The claimed properties of the polymer layer promote interaction between the polymer and a quantity of an analyte that is sufficient to be detectable by mass spectrometry. The polymer and the analyte generally interact through a binding functionality that is a component of the polymer.

The Rejections

Under 35 U.S.C. §112, second paragraph

Claims 8 and 86 are rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter the Applicants regard as their invention. Regarding claim 8, the Examiner submits that there is no antecedent basis of the claim term "the glass coating." Applicants have amended claim 8, replacing the term "the glass coating" with "the silicon oxide coating."

Claim 86 is rejected for including an improper Markush group. Claim 86 is canceled, rendering the rejection moot.

In view of the amendments to claims 8 and 86, Applicants submit that the reasons for the 35 U.S.C. §112, second paragraph rejections are obviated, and they respectfully request the withdrawal of the rejections under this section.

Under 35 U.S.C. §102(b)

Over Bergstrom et al. ("Bergstrom")

Claims 1-4, 6-11, 13-17, 76, 78-86 and 93 are rejected under 35 U.S.C. §102(b) as being allegedly anticipated by the disclosure of Bergstrom. In traversing the instant rejection, Applicants refer to the amended claims submitted herewith.

As an initial matter, claims 7, 9, 10, 80, 86 and 93 are canceled. Thus, the rejection of these claims is rendered moot. Thus, Applicants respectfully request the withdrawal of the rejection of claims 7, 9, 10, 80, 86 and 93 under 35 U.S.C. §102(b).

The Examiner characterizes Bergstrom as teaching a biosensor that comprises a metal surface layer that is capable of selective biomolecular interactions using surfaces that are activated for coupling with a desired ligand. Bergstrom is further characterized as disclosing that the device includes a surface of a free electron metal to which is bound an organic layer having

the structure X-R-Y, in which X binds to the metal surface and Y couples to a functional ligand. The ligand may be present in a porous matrix such as a hydrogel, which can be derivatized to contain organic functional groups such as hydroxyl, carboxyl amino, etc. The Examiner also takes the position that the device disclosed by Bergstrom is "removably insertable into a spectrometer" and that the analytes are "detectable by a mass spectrometer" as claimed by the Applicants.

Bergstrom discloses a biosensor that is used in conjunction with Surface Plasmon Resonance (SPR). *See*, for example, Summary of the Invention, column 3, lines 19-42 ("A generally useful sensing surface for biosensor systems, especially SPR, should fulfill the following desiderata...[w]e have now constructed a surface which in its preferred embodiment will fulfill all of these desiderate quite well."). The Bergstrom device can include a porous matrix "which has a thickness of from a few angstroms to several thousand angstroms...[i]n SPR applications the thickness of the matrix layer is preferably 5 to 10,000 angstroms, especially 5 to 1,000 angstroms." Column 5, lines 30-42. Thus, Bergstrom discloses a device in which the matrix layer is from 0.0005-1 micron in thickness and is preferably from 0.0005-0.1 microns thick

To maintain a *prima facie* case of anticipation, the Examiner must demonstrate that each and every element as set forth in the claim is found, either expressly or is inherently ***described*** in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the...claim. *See*, MPEP § 2131. Applicants assert that the subject matter of the claims presently before the Examiner is not described by the disclosure of Bergstrom, and respectfully request that this rejection be withdrawn.

In contrast to the Bergstrom device, Applicants' claimed probe includes a hydrogel layer that is at least 10 microns thick. As Applicants' device includes a hydrogel layer that is at least 10-times thicker than the thickest hydrogel layer disclosed by Bergstrom, the reference cannot be said to disclose or suggest Applicants' claimed mass spectrometer probe.

As each element of Applicants' claims is not found in the Bergstrom reference, it cannot be a proper basis for an anticipation rejection under 35 U.S.C. §102(b). During the above-mentioned telephone conference, Applicants' representatives and the Examiner agreed

that Bergstrom fails to disclose or suggest a hydrogel layer as thick as is presently claimed by the Applicants. Accordingly, as each element of the present claims is not disclosed in Bergstrom, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. §102(b) of claims 1-4, 6, 8, 9, 11, 13-17, 76, and 78-85.

Over Rembaum et al. ("Rembaum")

Claims 32-36 and 87-92 are rejected under 35 U.S.C. §102(b) as being allegedly anticipated by the disclosure of Rembaum. In order to expedite prosecution of the presently pending claims, Applicants have canceled claims 32-36 and 87-92, rendering the instant rejection moot. By canceling the claims, Applicants do not abandon the subject matter of the claims, and they expressly reserve the right to prosecute claims of the same or similar scope in one or more subsequent applications. In view of the cancellation of the subject claims, Applicants respectfully request the withdrawal of the rejection over Rembaum.

Under 35 U.S.C. §103(a)

Claims 18, 22 and 77 are rejected under 35 U.S.C. §103(a) as being allegedly obvious under 35 U.S.C. §103(a) over the disclosures of Bergstrom in view of Steckler. Applicants respectfully submit that a proper *prima facie* case of obviousness for the pending claims cannot be made out relying on the cited references.

To construct a *prima facie* case of obviousness, the Examiner must meet three criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references) must teach or suggest all of the claim limitations. *See*, MPEP §2142. Applicants respectfully suggest that the references neither disclose nor suggest all of the elements of the pending claims.

The Examiner characterizes Bergstrom as discussed previously, further acknowledging that Bergstrom fails to disclose a cationic hydrogel that is formed from the monomers recited in claims 22 and 77. Steckler is relied on for its disclosure of cationic

hydrogels with good water permeability and mechanical properties. The hydrogel is derived from monomers that include quaternized ammonium groups.

Both Bergstrom and Steckler are silent regarding a probe for mass spectrometric analyses in which the hydrogel layer is at least 10 microns thick as is set forth in Applicants' claims. As acknowledged by the Examiner during the teleconference with the Applicants' representatives, each element of the pending claims is not disclosed in the combined references and a proper *prima facie* case of obviousness cannot be set forth relying on the combination of Bergstrom and Steckler. Accordingly, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. §103(a).

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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